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Apr 17, 1997

DERWENT-ACC-NO: 1997-244722

DERWENT-WEEK: 199722

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TITLE: Modified *Bacillus thuringiensis* gene encoding insecticidal crystal protein -  
used for the production of transgenic plants, especially maize, used to control  
lepidopteran pests

INVENTOR: FOLKERTS, O; MERLO, D J

PATENT-ASSIGNEE: DOW AGROSCIENCES LLC (DOWC), DOWELANCO (DOWC)

PRIORITY-DATA: 1995US-005405P (October 13, 1995), 1996US-0729601 (October 11, 1996)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9713402 A1	April 17, 1997	E	118	A01H005/00
AU 9674467 A	April 30, 1997		000	A01H005/00
EP 861021 A1	September 2, 1998	E	000	A01H005/00
CN 1199321 A	November 18, 1998		000	A01H005/00
AU 708256 B	July 29, 1999		000	A01H005/00
BR 9611000 A	December 28, 1999		000	A01H005/00
MX 9802778 A1	October 1, 1998		000	A01H005/00
JP 2000507808 W	June 27, 2000		110	C12N015/09
US 6166302 A	December 26, 2000		000	A01H005/00

DESIGNATED-STATES: AL AM AT AU AZ BB BG BR BY CA CH CN CZ DK EE ES FI GB GE HU IL IS  
JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK  
TJ TM TR TT UA UG UZ VN AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT  
SD SE SZ UG AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

CITED-DOCUMENTS:EP 359472

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
WO 9713402A1	October 11, 1996	1996WO-US16582	
AU 9674467A	October 11, 1996	1996AU-0074467	
AU 9674467A		WO 9713402	Based on
EP 861021A1	October 11, 1996	1996EP-0936576	
EP 861021A1	October 11, 1996	1996WO-US16582	
EP 861021A1		WO 9713402	Based on
CN 1199321A	October 11, 1996	1996CN-0197587	
AU 708256B	October 11, 1996	1996AU-0074467	
AU 708256B		AU 9674467	Previous Publ.
AU 708256B		WO 9713402	Based on
BR 9611000A	October 11, 1996	1996BR-0011000	
BR 9611000A	October 11, 1996	1996WO-US16582	
BR 9611000A		WO 9713402	Based on
MX 9802778A1	April 8, 1998	1998MX-0002778	
JP2000507808W	October 11, 1996	1996WO-US16582	
JP2000507808W	October 11, 1996	1997JP-0515300	
JP2000507808W		WO 9713402	Based on
US 6166302A	October 13, 1995	1995US-005405P	Provisional
US 6166302A	October 11, 1996	1996US-0729601	

INT-CL (IPC): A01 H 5/00; A01 H 5/10; C12 N 15/09; C12 N 15/32; C12 N 15/82

ABSTRACTED-PUB-NO: US 6166302A

BASIC-ABSTRACT:

A plant optimised nucleotide sequence (I) encodes an insecticidal crystal protein (ICP) of 589-619 amino acids (aa); (I) is 71% homologous with a native *Bacillus thuringiensis* ICP-encoding sequence and 63% homologous to a maize nucleotide sequence and where the codon usage in the plant optimised sequence has a deviation from that of a host plant cell of 0.23-3.48. More specifically, (I) is the optimised *Bacillus thuringiensis* HD73 CryIA (c) toxin gene having the 1854 nucleotide sequence given in the specification. Also new is a method of engineering a maize specific optimised insecticidal gene sequence.

USE - The new ICP coding sequences and genetic constructs comprising them are used to produce transgenic plants (especially maize) that express an ICP, especially the HD73 CryIA(c) toxin from *Bacillus thuringiensis*. The HD73 toxin is fatal to lepidopteran pests that may feed on the plants. Transgenic plants may be monocots, e.g. maize, wheat, sorghum, oats, rye, barley millets, sugar cane, grasses and rice, or dicots, e.g. soy bean, legume, rapeseed, cotton, sunflower, tomato, potato, sugar beet, alfalfa, cloves and peanuts.

ADVANTAGE - The engineered coding sequence results in optimal expression of a bacterial toxin in plant cells. The new promoters are doubly enhanced 35S or 19S promoters which express foreign proteins more effectively than the parent promoters.

ABSTRACTED-PUB-NO: WO 9713402A

EQUIVALENT-ABSTRACTS:

A plant optimised nucleotide sequence (I) encodes an insecticidal crystal protein (ICP) of 589-619 amino acids (aa); (I) is 71% homologous with a native *Bacillus thuringiensis* ICP-encoding sequence and 63% homologous to a maize nucleotide sequence and where the codon usage in the plant optimised sequence has a deviation from that of a host plant cell of 0.23-3.48. More specifically, (I) is the optimised *Bacillus thuringiensis* HD73 CryIA (c) toxin gene having the 1854 nucleotide sequence given in the specification. Also new is a method of engineering a maize specific optimised insecticidal gene sequence.

USE - The new ICP coding sequences and genetic constructs comprising them are used to produce transgenic plants (especially maize) that express an ICP, especially the HD73 CryIA(c) toxin from *Bacillus thuringiensis*. The HD73 toxin is fatal to lepidopteran pests that may feed on the plants. Transgenic plants may be monocots, e.g. maize, wheat, sorghum, oats, rye, barley millets, sugar cane, grasses and rice, or dicots, e.g. soy bean, legume, rapeseed, cotton, sunflower, tomato, potato, sugar beet, alfalfa, cloves and peanuts.

ADVANTAGE - The engineered coding sequence results in optimal expression of a bacterial toxin in plant cells. The new promoters are doubly enhanced 35S or 19S promoters which express foreign proteins more effectively than the parent promoters.

CHOSEN-DRAWING: Dwg.0/8

DERWENT-CLASS: C06 D16 P13

CPI-CODES: C04-A08C2E; C04-E02F; C04-F10B1; C14-U01; D05-H12B2; D05-H12D5; D05-H12E; D05-H16B; D05-H18;